Exercise 3: (this will all be done in the editor, make sure they know the difference!)

Exercise 3(a): PICTURES!

Make sure they are finding small enough pictures and saving them to their newly created lab1 folders.

Exercise 3(b): Manipulating Pictures

```
myFile = getMediaPath("lab1/filename.jpg")
myPic = makePicture(myFile)
show(myPic)
```

Exercise 3(c): `pickAndShow`

```
def pickAndShow()
    myFile = pickAFile()
    myPic = makePicture(myFile)
    show(myPic)

pickAndShow()
```

Exercise 3(d): `decreaseRed`

```
def decreaseRed(picture):
  for p in getPixels(picture):
    value = getRed(p)
    setRed(p, value * 0.5)

myFile = pickAFile()
myPic = makePicture(myFile)
decreaseRed(myPic)
show(myPic)
```

Exercise 4:

Exercise 4(a): `increaseRed`

```
def increaseRed(picture):
  for p in getPixels(picture):
    value = getRed(p)
    setRed(p, value * 1.2)
```

Exercise 4(b): `clearBlue`

```
def clearBlue(picture):
  for p in getPixels(picture):
    setBlue(p, 0)
```

Exercise 5

Exerise 5(a): `negative`

```
def negative(picture):
   for px in getPixels(picture):
      red = getRed(px)
      green = getGreen(px)
      blue = getBlue(px)
      negColor = makeColor( 255-red, 255-green, 255-blue)
      setColor(px, negColor)
```

Exerise 5(b): double negative

```
negative(somePicture)
negative(somePicture)
show(somePicture)
```

OR

```
negative(negative(somePicture))
show(somePicture)
```

Exercise 6:

Exercise 6(a): `grayscale`

```
def grayscale(picture):
   for p in getPixels(picture):
      sum = getRed(p) + getGreen(p) + getBlue(p)
      intensity = sum / 3
      setColor(p, makeColor(intensity, intensity, intensity))
```

Exercise 6(b): Double grayscale

We've lost information!

- We no longer know what the ratios are between the reds, the greens, and the blues
- We no longer know any particular value.

Exercise 6(c): Building a better grayscale!

Revealed to them in lecture at the end of lab:

```
def greyScaleNew(picture):
  for px in getPixels(picture):
    newRed = getRed(px) * 0.299
    newGreen = getGreen(px) * 0.587
    newBlue = getBlue(px) * 0.114
    luminance = newRed+newGreen+newBlue
    setColor(px,makeColor(luminance,luminance,luminance))
```

Exercise 7: `makeSunset`

```
def makeSunset(picture):
  for p in getPixels(picture):
    value = getBlue(p)
    setBlue(p, value * 0.7)
    value = getGreen(p)
    setGreen(p, value * 0.7)
```